EPSON®
LX-300

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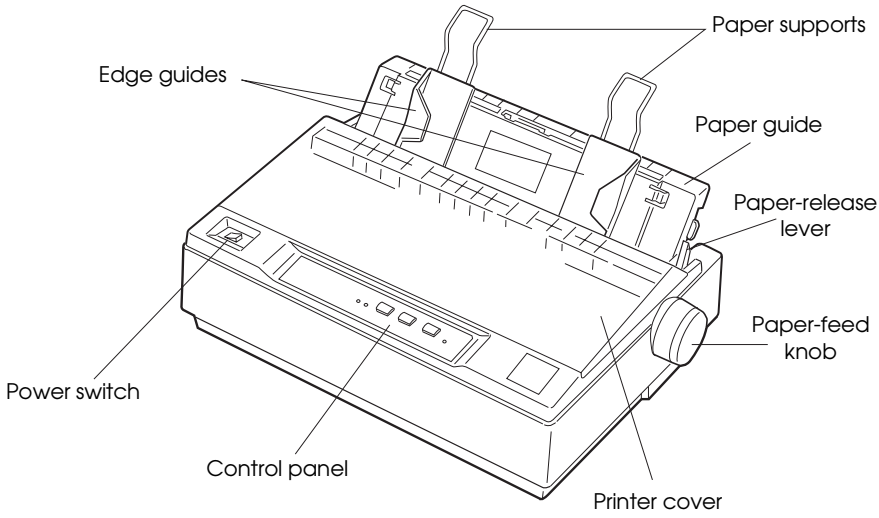
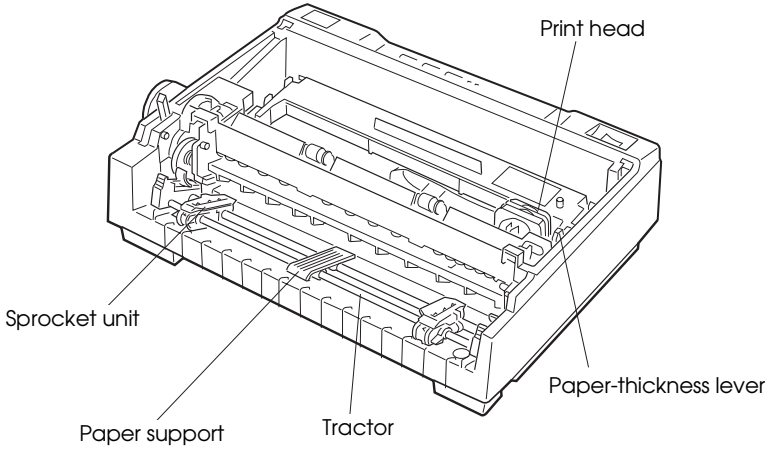
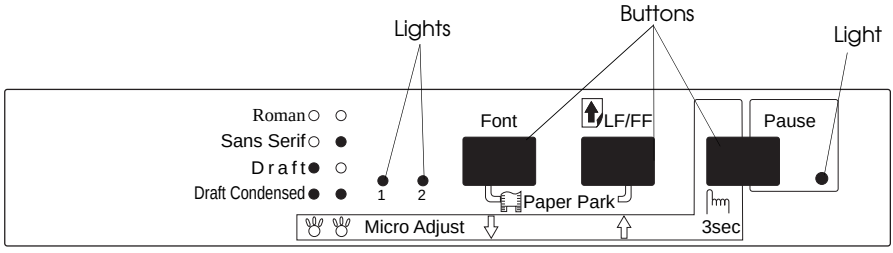
User's Guide







The color samples used on the cover were printed using the LX-300 printer.

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FCC Compliance Statement

For United States Users

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- ❏ Reorient or relocate the receiving antenna
- ❏ Increase the separation between the equipment and receiver
- ❏ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- ❏ Consult the dealer or an experienced radio/TV technician for help.

WARNING

The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC Certification of this device and may cause interference levels which exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with this device. If this equipment has more than one interface connector, do not leave cables connected to unused interfaces.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

For Canadian Users

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

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- ❏ Assistance in locating your nearest Authorized Epson Reseller or Service Center
- ❏ Technical assistance with the installation, configuration, and operation of Epson products
- ❏ Sales of the *ESC/P® Reference Manual*
- ❏ Epson technical information library fax service
- ❏ Product literature with technical specifications on our current and new products
- ❏ Sales of ribbons, supplies, parts, documentation, and accessories for your Epson product
- ❏ Customer Relations

For United Kingdom Users

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All Epson Products, other than OEM products, are fully guaranteed against faulty operation or performance for a period of ONE YEAR from date of purchase by the user of the product.

All claims under this guarantee MUST be supported by evidence of purchase, normally the bill of sale invoice, and it is the responsibility of the claimant to furnish such proof. Epson (UK) Limited does not issue or operate any form of guarantee registration card.

Claims are made by the user returning the product to the supplier from whom it was purchased or, if this is impractical, to any Epson supplier who also handles the same product. In the event of any difficulty, users are requested to contact the Service Co-ordinator Manager at Epson (UK) Limited.

Epson (UK) Limited, or Epson Appointed Distributors, will at their discretion repair or replace part or all of the product to provide, in their judgement, a satisfactory performance of the product consistent with its age and apparent usage.

This guarantee covers the cost of both the parts and labour required to correct any malfunction of the equipment, but specifically excludes: wear and tear, consumables, physical damage due to incorrect use or misuse and damage or faulty operation due to unauthorized and inexpert repair.

The guarantee is restricted to the performance of the product alone, and Epson (UK) Limited does not accept responsibility for any consequential loss or damage, nor claimed or implied performance, when the product is used in any combination with other equipment or program software.

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Safety information

Warning: *This appliance must be earthed. Refer to rating plate for voltage and check that the appliance voltage corresponds to the supply voltage.*

Important: *The wires in the mains lead fitted to this appliance are coloured in accordance with the following code:*

Green and yellow — Earth
Blue — Neutral
Brown — Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The green and yellow wire must be connected to the terminal in the plug which is marked with the letter E or with the earth symbol (G) or coloured green or green and yellow.

The blue wire must be connected to the terminal in the plug marked with the letter N or coloured black.

The brown wire must be connected to the terminal in the plug marked with the letter L or coloured white.

If damage occurs to the plug, replace the cord set or consult a qualified electrician.

Replace fuses only with a fuse of the correct size and rating.

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Introduction

Features

Your Epson® 9-pin dot matrix printer offers these outstanding features:

- ❏ High-speed printing. Print up to 220 characters per second (cps) in 10-cpi draft mode.
- ❏ Quiet operation. You'll notice the benefit of quiet printing in your work environment.
- ❏ Simple control panel. Three buttons and three lights give you fingertip-access to most printer functions.
- ❏ Two built-in interfaces: parallel and EIA-232D serial.
- ❏ Detachable push and pull tractor. Feed continuous paper with ease and print on single sheets without removing the continuous paper supply.
- ❏ Compact design. This printer fits neatly into available space in your home or office.
- ❏ Longer printable area. Print up to 66 lines on A4-size or 62 lines on standard letter paper.
- ❏ IBM® 2380 printer emulation mode.

In addition, you can get custom results with the following options:

- ❏ Color Upgrade Kit (C83208*) adds visual interest to printed documents by switching to a color ribbon cartridge.
- ❏ Pull Tractor (C80030*) for printing continuous paper and multi-part forms (used in the pull-tractor position in conjunction with the standard tractor in the push tractor position).

- ❏ Roll Paper Holder (#8310) uses 8½-inch or 21.6-cm roll paper used by telexes and similar machines. This option is not available in some countries.

- ❏ Cut-sheet feeder (C80637*) loads up to 50 sheets of single-sheet bond paper automatically.

Finding Your Way Around

This manual provides fully illustrated, step-by-step instructions for setting up and operating your printer.

- ❏ Chapter 1 describes how to unpack, set up, test, and connect the printer to your computer. Be sure to read this chapter first.

- ❏ Chapter 2 includes information on how to get the printing results you want, how to install options, and how to maintain your printer.

- ❏ Chapter 3 offers simple tips on solving printing problems. If printing results are not what you expect, or the printer doesn't work properly, turn here for help.

- ❏ The Appendix covers the printer's specifications and lists programming commands.

- ❏ An index at the back of the manual helps you find information on specific topics quickly.

Warnings, Cautions, and Notes

W ***Warnings*** *must be followed carefully to avoid bodily injury.*

C ***Cautions*** *must be observed to avoid damage to your equipment.*

Notes *contain important information and useful tips on the operation of your printer.*

Important Safety Instructions

1. Read all of these instructions before you set up your printer.

2. Follow all warnings and instructions marked on the printer.

3. Unplug this printer from the wall outlet before you clean it. Use a damp cloth for cleaning and do not use liquid or aerosol cleaners.

4. Do not use your printer near water or spill any liquid on it.

5. Do not place the printer on an unstable cart, stand, table, or other surface that may allow the printer to fall.

6. Do not block any slots or openings in the cabinet. These are provided for the ventilation necessary to ensure reliable operation and protection from overheating. Placing the printer on a bed, sofa, rug, or other similar surface may block the openings. Also, do not place the printer in a built-in installation, such as a bookcase, unless proper ventilation is provided.

7. Never place the printer near or over a radiator or heat register.

8. Use the type of power source indicated on the label. If you are not sure of the type of power available, consult your dealer or local power company.

9. This printer may be equipped with a plug having a third (grounding) pin, which fits only into a grounding-type outlet. This is a safety feature. If you are unable to insert the plug into the outlet, have an electrician replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

10. Do not put your printer where the cord will be walked on.

11. If you use an extension cord, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord's ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

12. Never push objects of any kind into your printer as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock.

13. Except as specifically explained in the user's manual, do not attempt to repair the printer yourself. Opening or removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to service personnel.

14. Unplug this printer from the wall outlet and have it repaired by a qualified service person under the following conditions:

    A. When the power cord or plug is damaged or frayed.

    B. If liquid has been spilled into it.

    C. If it has been exposed to rain or water.

    D. If it does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the printer to normal operation.

    E. If it has been dropped or the cabinet has been damaged.

    F. If it exhibits a distinct change in performance, indicating a need for service.

Chapter 1

Setting Up the Printer

1

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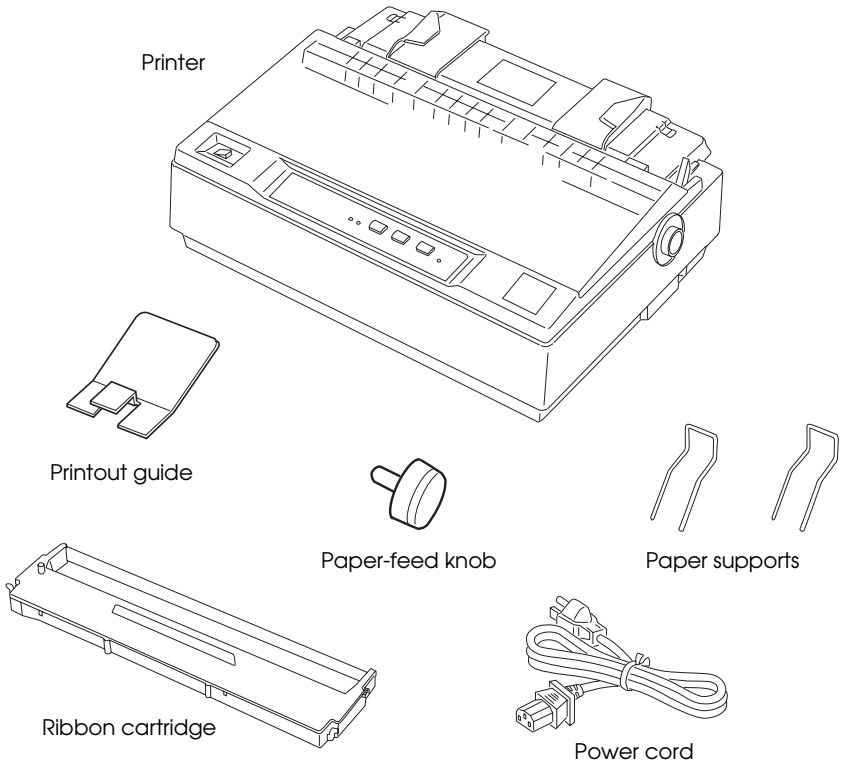
Unpacking the Printer

Your printer box should include these items.



In some locations, the power cord is attached to the printer.

C ***Caution:***
There are several versions of this printer designed for different voltages, and it is not possible to change the voltage. If the label on the back of the printer does not show the correct voltage for your country, contact your dealer.

Choosing a place for the printer

When selecting a place to set up your printer, choose a safe, convenient location that provides the following:

- ❏ A flat, stable surface
- ❏ Adequate room around the printer to allow easy operation and maintenance. Make sure it's close enough to the computer for the printer cable to reach.
- ❏ Place the printer where you can easily unplug the power cord.
- ❏ Moderate environmental conditions. Select a cool, dry area and protect your printer from direct sunlight, excessive heat, moisture, or dust.
- ❏ Appropriate power source. Make sure you use a grounded outlet; do not use an adapter plug. Avoid electrical outlets controlled by timers or wall switches; an interruption in power can wipe out the information in your computer or printer memory.

If you place the printer on a stand, follow these guidelines:

- ❏ Use a stand that supports at least 10 kg (22 lb).
- ❏ Never use a stand that tilts the printer. Always keep it level.
- ❏ Provide enough clearance below the stand and between the legs so your continuous paper flows smoothly.
- ❏ Place cables so they do not interfere with paper feeding; secure them to a leg of the stand if possible.

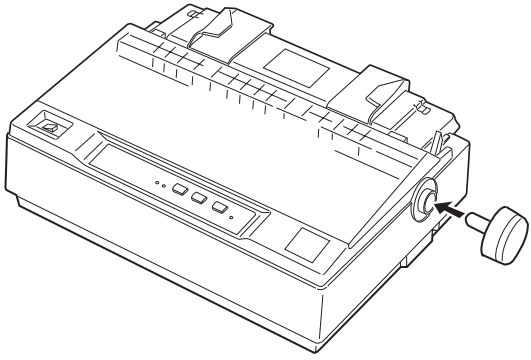
Assembling the Printer

Follow the steps in this section to get your printer up and running.

Installing the paper-feed knob

The first step in assembling the printer is installing the paper-feed knob.

1. Insert the knob into the hole on the printer's side and rotate it slowly until it slips onto the shaft.

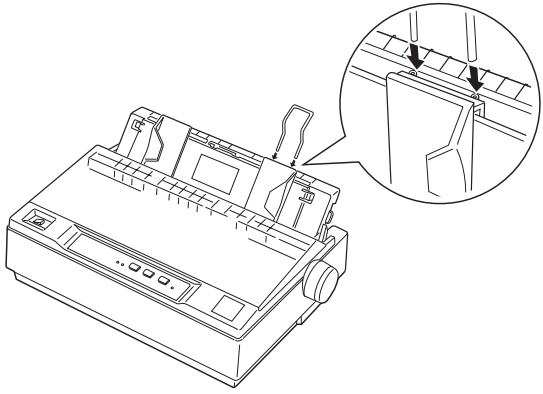


2. Push firmly on the paper-feed knob until it fits against the printer case.

Attaching the paper supports

You should install the paper supports before you begin using the printer.

1. Raise the paper guide. Hold one of the paper supports and push the tips into the notches on the edge guide.

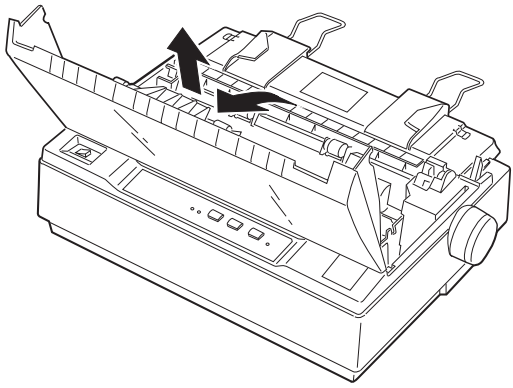


2. Repeat for the other paper support. Lower the paper guide.

Installing the ribbon cartridge

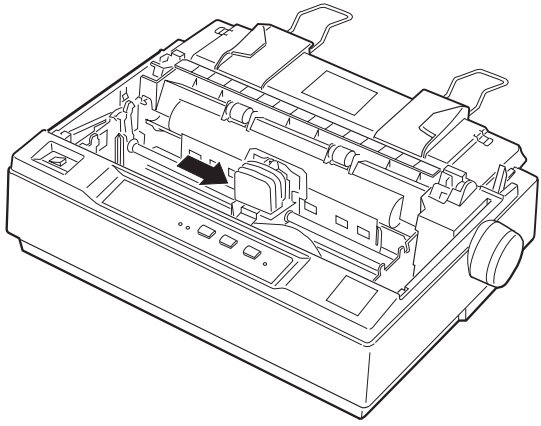
Before installing the ribbon cartridge, make sure the printer is not plugged into an electrical outlet.

1. Open the printer cover to the upright position, then pull it up to remove it.

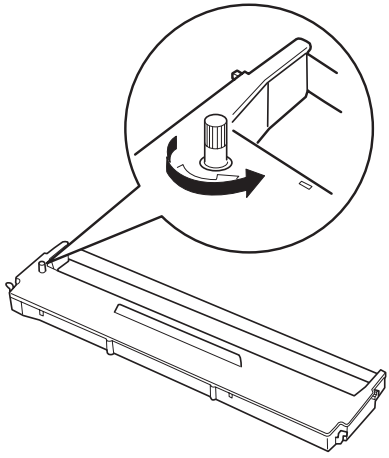


W ***Warning:***
Never move the print head while the printer is turned on; this can damage the printer. Also, if you have just used the printer, let the print head cool for a few minutes before you touch it.

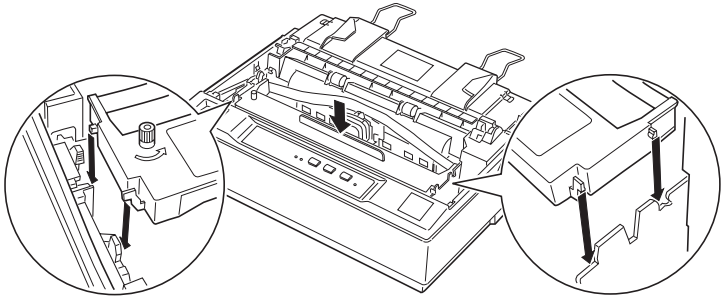
2. Slide the print head to the middle of the printer.



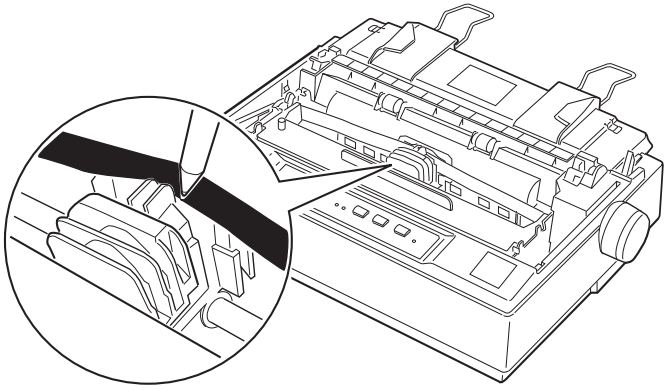
3. Turn the ribbon-tightening knob in the direction of the arrow to remove any slack from the ribbon so it is easier to install.



4. Insert the ribbon cartridge into the printer as shown; then press both sides of the cartridge firmly to fit the plastic hooks into the printer slots.



5. Use a pointed object, such as a ball point pen, to guide the ribbon between the print head and ribbon guide. Turn the ribbon tightening knob to help feed the ribbon into place; it should not be twisted or creased.



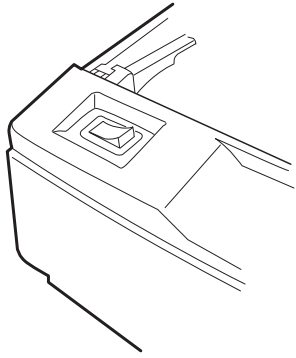
6. Slide the print head from side to side to make sure it moves smoothly.

7. Re-install and close the printer cover.

When the printing becomes faint, you need to replace the ribbon cartridge. To remove the old ribbon cartridge, first move the print head to the center of the printer. Then remove the cartridge by lifting the posts on the either side and taking it out of the printer.

Plugging in the printer

1. Make sure the power switch on the printer is turned off. It is off when the N side of the switch is pressed down.



2. Check the label on the bottom of the printer to make sure the voltage required by the printer matches that of your electrical outlet.

C ***Caution:***
If the rated voltage and your outlet voltage do not match, contact your dealer for assistance. Do not plug in the power cord.

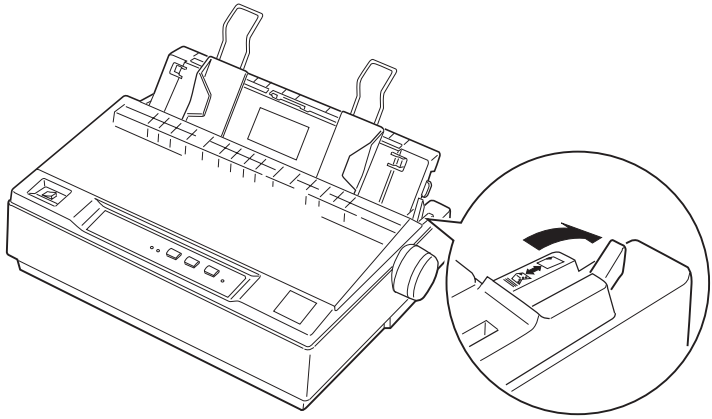
3. If the power cord is not attached to the printer, connect it to the AC inlet on the printer.

4. Plug the power cord into a properly grounded electrical outlet.

Running the Self Test

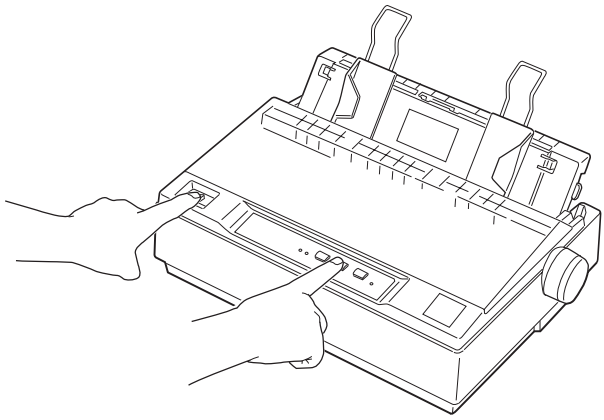
The built-in self test function demonstrates that the printer is working properly. You can run the test with either continuous paper or single sheets; this section describes the easier way, with single sheets.

1. Make sure the printer is turned off and the paper-release lever is pushed back to the single-sheet position. Raise the paper guide upright.

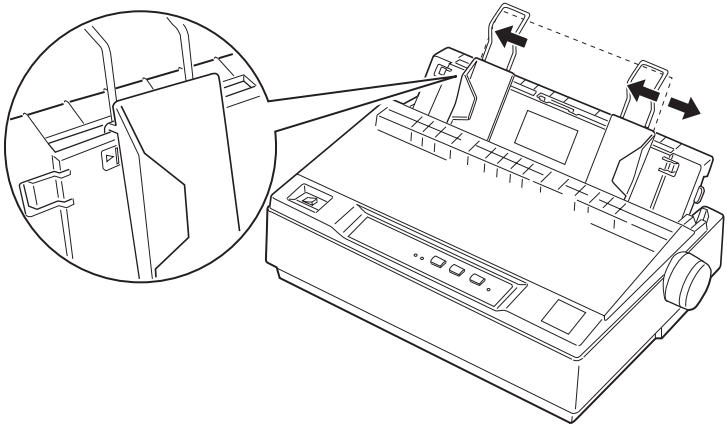


C ***Caution:***
You should use paper at least 210 mm or 8 1/4 inches wide to run the self test; otherwise, the print head prints directly on the platen.

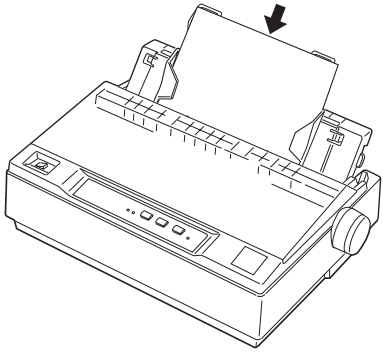
2. While holding down the LF/FF button, turn on the printer. The PAUSE light flashes.



3. Slide the left edge guide until it locks in place at the guide mark. Next, adjust the right edge guide to match the width of your paper.



4. Slide a sheet of paper down firmly between the edge guides until it meets resistance. The printer loads the sheet automatically. Press the PAUSE button, then the printer begins to print.



C ***Caution:***
Always close the printer cover while the printer is printing. The printer cover helps the paper feed.

5. To stop printing temporarily, press the PAUSE button.

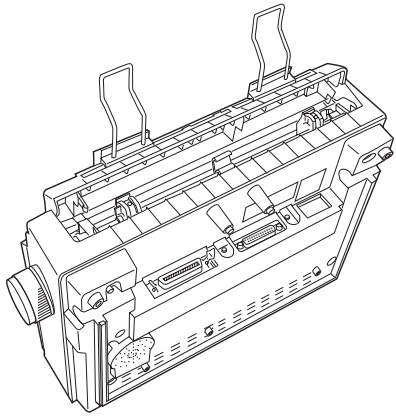
6. To end the self test, make sure the printer is not printing. Press LF/FF to eject the sheet; then turn off the printer.

Here is part of a typical self-test printout:

Note:
If the self test did not print satisfactorily, see Chapter 3. If it prints correctly, go on to the next section.

Connecting the Printer to Your Computer

Your printer includes both a Centronics®compatible parallel interface and an EIA-232D serial interface. Before you begin, place the printer upright, as shown below. (This makes it easier to connect the cable.)



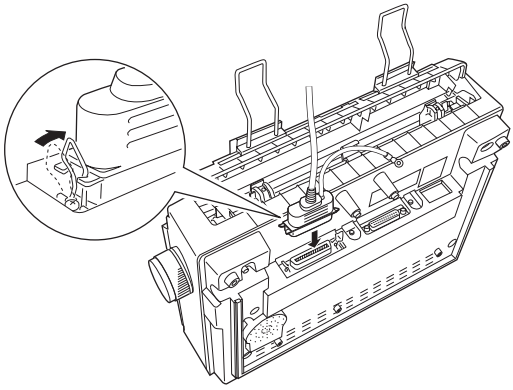
Connect your computer to the desired interface as described below.

You can connect a cable to both interfaces; the printer switches automatically to the appropriate interface when it receives data.

Using the parallel interface

You need a shielded, twisted-pair cable (not longer than 2 meters—6 feet) to use the parallel interface.

1. Turn off both the computer and the printer. Plug the parallel cable connector securely into the printer's parallel interface. Squeeze the wire clips together until they lock in place on either side of the connector.



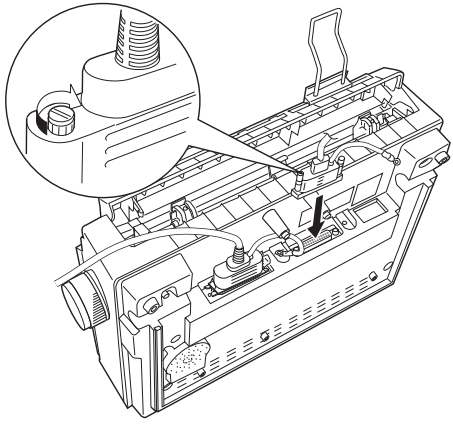
2. Guide the interface cable through the slot on the side of the printer so that it does not block the paper supply as shown in the illustration on page 1-16.

   Note:
   If there is a ground wire at the end of the cable, attach it to the ground connector at the right of the interface.

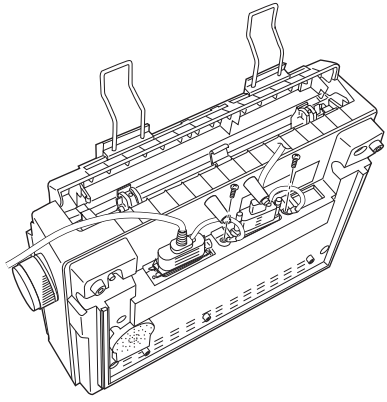
3. Plug the other end of the cable into the computer's parallel interface. (If there is a ground wire at the end of the cable, attach it to the ground connector at the back of the computer.)

Using the serial interface

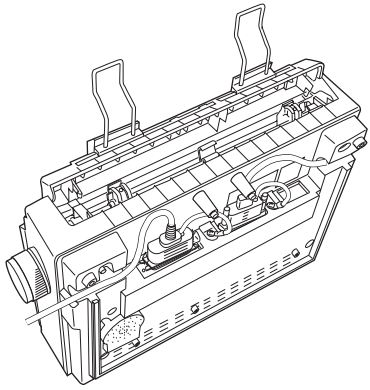
1. Turn off both the computer and the printer. Plug the serial cable connector securely into the printer's serial interface. Tighten the screws on either side of the connector.



Note:
If there is a ground wire at the end of the cable, attach it to the ground connector to the right of the interface.



2. Guide the interface cable through the slot on the side of the printer so that it does not block the paper supply.



3. Plug the other end of the cable into the computer's serial interface; then tighten the screws on either side of the connector. (If there is a ground wire at the end of the cable, attach it to the ground connector at the back of the computer.)

4. Use the Printer Setting mode to change the baud rate, parity bit, data length, or ETX/ACK if necessary. See "Changing the Printer Settings" in Chapter 2.

Setting Up Your Software

Most software lets you specify the type of printer you use so that you can take full advantage of the printer's features. Your software probably provides an installation or setup section that presents a list of printers.

Microsoft® Windows™ 3.1 and all Windows programs

If Windows is installed on your computer system, follow the steps below to install the right driver for your printer. Your printer will work correctly for all your Windows programs, such as Word for Windows, Lotus® 1-2-3® for Windows, and CorelDRAW.®

If Windows is not already installed on your system, run the Windows setup program as described in the documentation that comes with the program. Follow steps 4 through 10 below when you reach the section about choosing a printer.

1. In the Main window, double click the Control Panel icon.
2. Double click the Printers icon.
3. Choose the Add>> button.
4. From the list of printers box, select Epson LX-300. If LX-300 is not available, select Epson JX-80 if you plan to use color or Epson LX-810, LX-850, or LX-800 if you do not plan to use color.
5. Choose the Install button. A dialog box may instruct you to insert a diskette.
6. If necessary, insert the diskette required.
7. Choose the Setup button.
8. Select the appropriate resolution.
9. Choose the OK button.
10. Highlight Epson LX-300 (or the printer you added) and click the button labeled Set As Default Printer.
11. Click the Close button.

Using non-Windows software

Most application programs let you specify the type of printer you use so that the program can take full advantage of the printer's features. Many programs provide an installation or setup menu that presents a list of printers.

To take full advantage of your printer's features, choose LX-300 from the list of printers. If the LX-300 is not listed, choose the first available printer from the following list. If you plan to use color, you must choose either LX-300, JX-80, or EX-800. The other printers cannot use color.

LX-810/850	JX-80
LX-800	EX-800
LX-80/86	Any FX printer
FX-850	Epson printer
FX-86e/800	Draft printer

If your software does not list the LX-300, you may want to contact the software manufacturer for an update.

Chapter 2

Using the Printer

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- Selecting fonts 2-4

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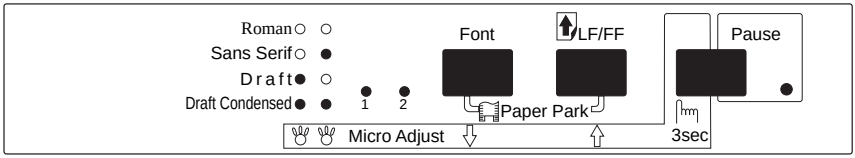
Using the Control Panel



You can control simple printer operations—such as line feeding, form feeding, loading and ejecting paper, and selecting fonts—with the buttons on the control panel. The control panel lights show the printer's status and the current font.

Lights and buttons

PAUSE light

The orange PAUSE light is on when the printer stops printing. Each time you turn on the printer, the light flashes briefly and the beeper sounds four times. When the printer is out of paper, the light flashes and the beeper sounds three times. The light also flashes when you can tear off the last sheet at the edge of the printer cover.

The PAUSE light goes on and the beeper sounds five times if an error occurs.

FONT 1 and FONT 2 lights

The green FONT lights, 1 and 2, indicate the current font setting. For more about selecting fonts, see page 2-4.

FONT button

Press the FONT button during normal operation to cycle through the printer fonts listed on the control panel. When you press the button, the FONT lights change to indicate your current selection. For more about choosing a font, see page 2-4.

If you hold down the FONT button while you turn on the printer, you enter the Printer Setting mode, where you can change many of the printer's settings. For more about printer settings, see page 2-19.

LF/FF button

During normal operation, you can press this button briefly to feed paper line by line. Hold it down to load a single sheet, or to advance continuous paper to the next top-of-form position. You can also press LF/FF to eject a page.

If you want to make sure the printer is working correctly, you can also use this button to run the self test. To start the self test, hold down the LF/FF button while you turn on the printer. For complete instructions, see page 1-10.

PAUSE button

Press the PAUSE button to stop the printer temporarily during printing or the self test. Press it again to resume activity.

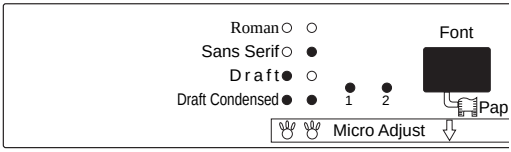
PAPER PARK

Press the FONT and LF/FF buttons together to feed continuous paper backward to the paper-park position. See "Printing with the push tractor."

MICRO ADJUST

Feeds paper forward or backward to adjust the loading position. See "Adjusting the loading position."

Selecting fonts



To choose one of the four internal fonts listed on the control panel, press the FONT button. The two font lights come on (N) and go off (0) to show the current selection. Press the button repeatedly to cycle through all of the available selections; then stop when you reach the desired font.

Your selection stays in effect until you change it again or turn off the printer. However, any font choices you make with your software will cancel your control panel selection. The table below shows how the FONT lights appear for each selection.

Font	**FONT Lights 1 2**	**Sample**
Epson Roman (NLQ)	N N	
Epson Sans Serif (NLQ)	N 0	
Epson Draft	0 N	
Epson Draft condensed	0 0	

N = on 0 = off

Printing on Single Sheets

You can use the paper guide to print on single sheets with a width of 182 mm (7.2 inches) to 257 mm (10.1 inches).

Note:
You can install an optional cut-sheet feeder to load up to 50 sheets automatically. See page 2-24 for details.

Loading single sheets

You load single sheets as shown in "Running the Self Test" in Chapter 1. For normal use, turn on the printer without pressing any other buttons. When the printer receives data, it begins to print.

Adjusting the loading position

If you want to adjust the position where printing begins on the page, follow these steps (these instructions also work when using the pull or push tractor):

1. With paper loaded, hold down the PAUSE button until the printer beeps once and the FONT lights begin to flash.

2. Press the LF/FF button to feed the paper forward, or press the FONT button to feed the paper backward. (Press either button as many times as necessary until you reach the desired position.)

3. To complete the adjustment, press the PAUSE button or send data from your computer.

Getting the results you expect

When you print on single sheets, you may notice that the printer prints the first page of your file correctly, but then prints too low on the next page, or that it prints the last few lines from one page onto the next. This happens because single sheet handling differs slightly from continuous paper handling.

It's easy to adjust the printer so that you get the right results. Simply change some of the settings in your software program as described below.

1. When you install a software program, it normally asks you what printer you are using. Make sure you choose the correct printer. See Chapter 1 for instructions.

2. Many programs have an option that you can use to set the maximum lines-per-page. If you are using standard 8 1/2 × 11-inch paper, set the lines-per-page to 61.

   Note:
   To find the right lines-per-page setting for paper that is not 8 1/2 × 11, create a test document using your software program. Set your top and bottom margins to 0 and then create a file of numbered lines from 1 to 66. When you print your file, notice the last number printed on the first page. This is your maximum lines-per-page setting.

3. If your program doesn't have a lines-per-page setting, try decreasing the top margin or increasing the bottom margin, or both, until you get the results you want.

4. You can also try adjusting the form length setting. For a standard 8 1/2 × 11-inch page, try setting the form length to 10 inches.

5. Some programs let you indicate whether you are using single sheets or continuous paper. Make sure you choose single sheets.

Printing on Continuous Paper

Your printer can handle continuous paper with a width of 101 mm (4.0 inches) to 254 mm (10.0 inches). Depending on where you position the tractor, you can use it as a pull tractor or a push tractor. These guidelines can help you decide where to position the tractor:

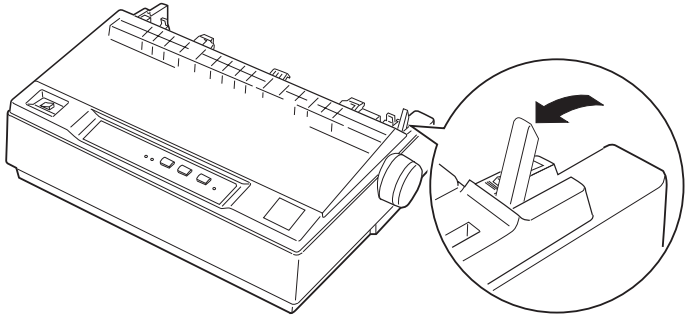
- ❏ Do you want to switch between printing on single sheets and continuous paper without removing the paper supply? Will you tear off continuous paper sheet-by-sheet? Use the tractor in the push tractor position. (The printer comes with the tractor installed in this position.) See the following section.

- ❏ Are you printing on labels, multi-part forms, or other documents that require a precise print position? Use the tractor as a pull tractor. See page 2-11 for instructions.

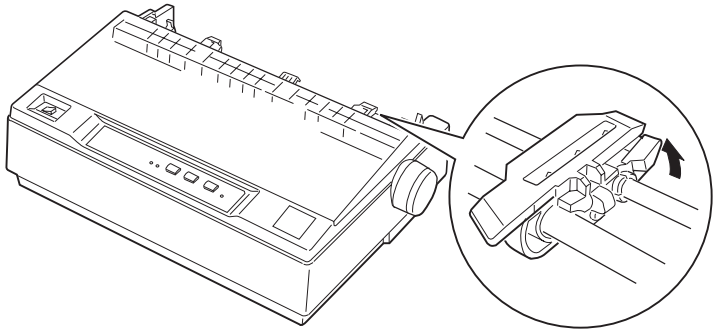
Printing with the push tractor

When using the push tractor, it is a good idea to set the Auto tear off feature in the Printer Setting mode to on. See "Changing the Printer Settings" on page 2-19. Here's how to load continuous paper using the push tractor:

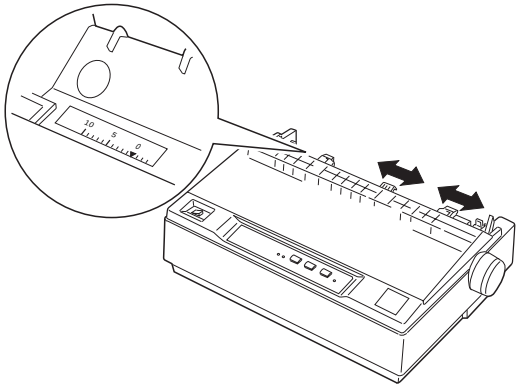
1. Make sure the printer is turned off. Remove the paper guide and place the paper-release lever in the continuous paper position.



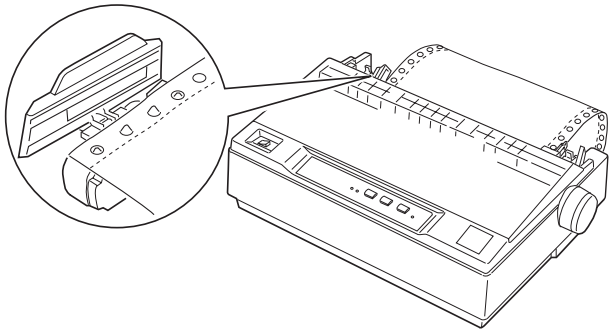
2. Release the sprocket units by pulling the sprocket locks forward.



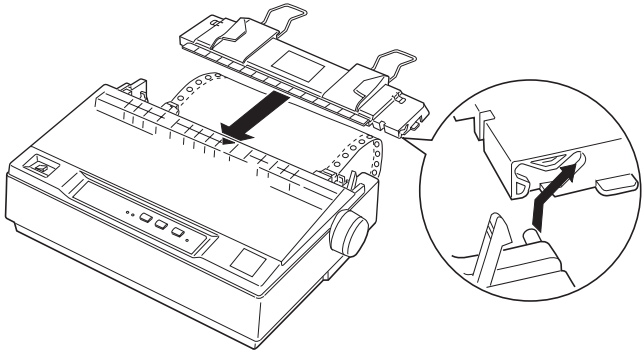
3. Slide the left sprocket unit using the scale on the printer as a guide. The printer prints to the right of the position marked 0. Push the sprocket lock lever back to lock it in place. Then slide the right sprocket unit to match the width of your paper, but do not lock it. Move the paper support so it is midway between the sprocket units.



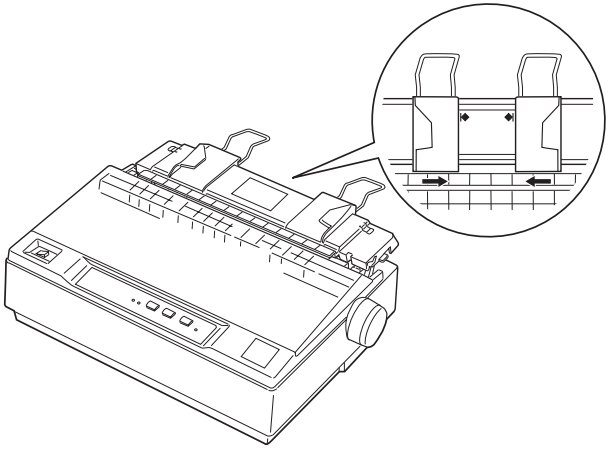
4. Make sure your paper has a clean, straight leading edge. Open the sprocket covers. Fit the first holes of the paper over the sprocket pins and then close the sprocket covers. Slide the right sprocket unit to remove any slack in the paper and lock it in place. Now the paper is in the paper-park position.



5. To separate the incoming paper from the printed paper, attach the paper guide by holding it horizontally and fitting its notches over the printer's mounting posts as shown below. Then slide the paper guide toward the front of the printer until you feel it click.



6. Slide the left edge guide to the center until it stops at the guide mark. Then slide the right edge guide to the opposite guide mark.



7. Turn on the printer.

8. Make sure the printer cover is closed. Press the LF/FF button to feed the paper to the loading position. When the printer receives data, it begins printing automatically.

9. When you finish printing (the printer receives no data for three seconds) the printer feeds the perforation of the continuous paper to the edge of the printer cover so that you can tear off the last sheet. The PAUSE light flashes.

Note:

❏ *Set the Auto tear off feature in the Printer Setting mode to on. Otherwise, the printer does not feed the perforation to the edge of the printer cover.*

❏ *If the perforation and the edge of the printer cover do not match, adjust the paper position by following the steps in "Adjusting the loading position," while the* PAUSE *light is flashing.*

When you send more data, the paper automatically feeds back to the loading position. If you want to change the position where printing begins on the page, follow the steps on page 2-5 to adjust the loading position.

Switching back to single sheets

To switch to single sheets, press the FONT and LF/FF buttons at the same time; the printer feeds the paper backward into the paper-park position. Then, follow the steps in "Loading single sheets."

C ***Caution:***
Always tear off paper before back-feeding; back-feeding too many sheets can cause a paper jam.

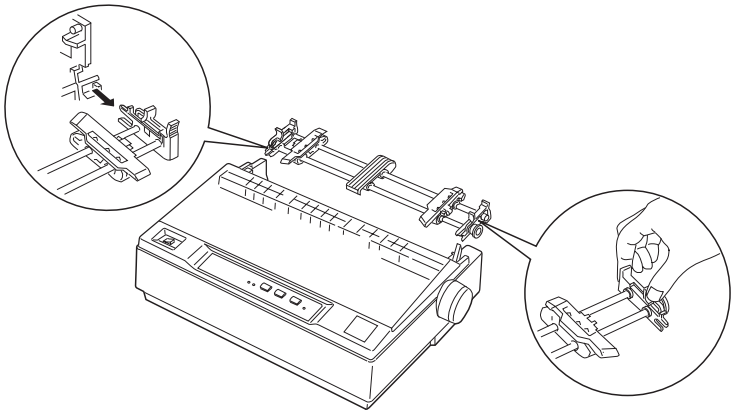
Printing with the pull tractor

To load continuous paper using the pull tractor, you must move the tractor to the pull tractor position, as described in steps 1 through 3 below. If your tractor is already installed in this position, make sure the printer is off and skip to step 6.

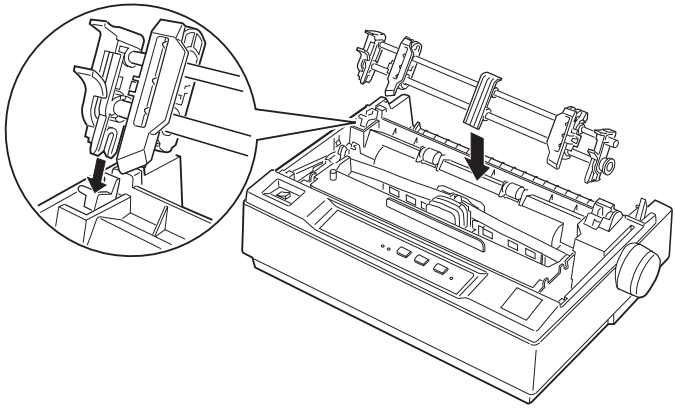
C ***Caution:***
When using the pull tractor, set the Auto tear off feature in the Printer Setting mode to off; otherwise the paper may jam.

1. Turn the printer off; then remove the paper guide. Pull the paper-release lever forward to the continuous paper position as shown in the illustration on page 2-7.

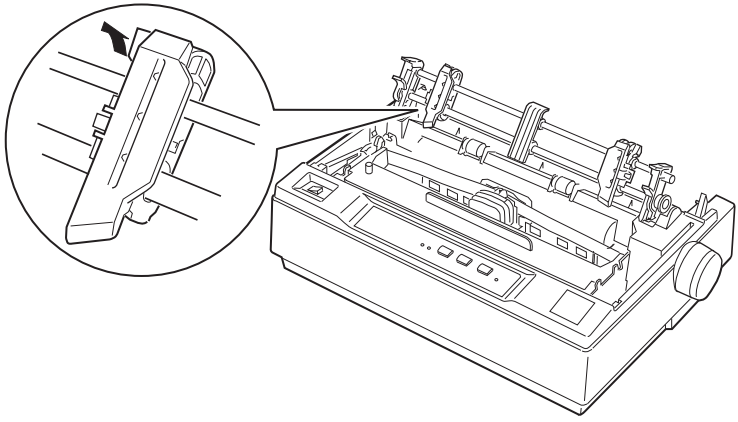
2. Squeeze the tractor's lock tabs gently and pull the tractor away from the printer. Remove the printer cover.



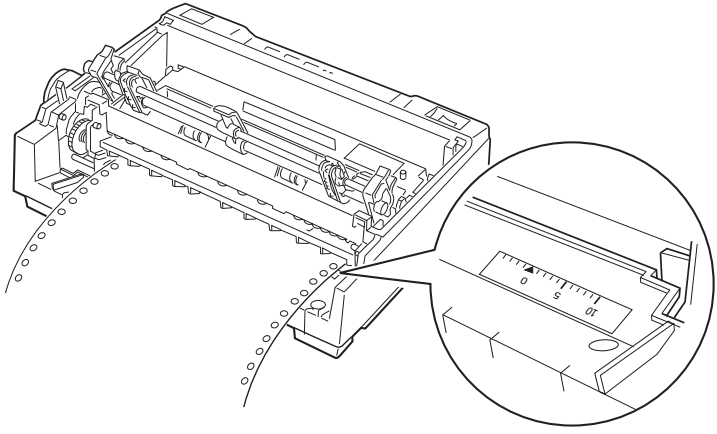
3. Lift the tractor forward to the mounting slot at the top of the printer and tilt it into place as shown below. When you push the tractor onto the posts, you should feel the notches snap into place.



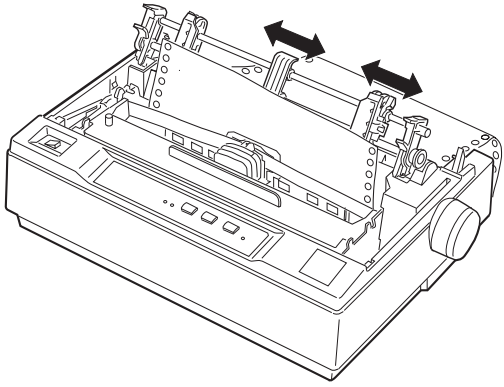
4. Release the sprocket units by pulling the sprocket locks forward.



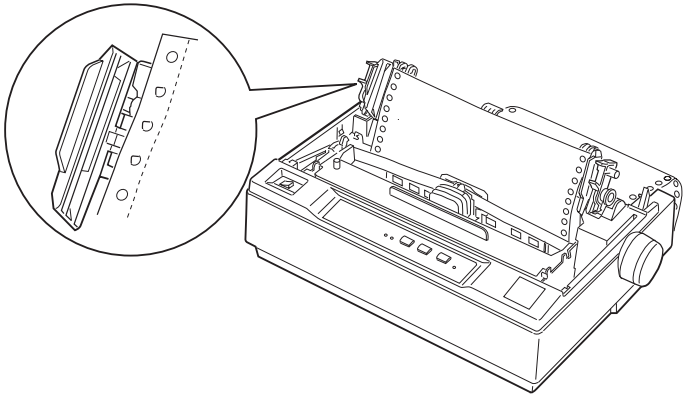
5. Insert the paper into the paper slot as shown below and pull it up. Position the paper using the scale on the printer as a guide. The printer prints to the right of the position marked 0.



6. Slide the left sprocket unit so that its sprockets match the position of the holes in the paper and lock the unit in place. Then slide the right sprocket unit to match the width of your paper, but do not lock it. Move the paper support midway between the two sprocket units.



7. Make sure your paper has a clean, straight leading edge. Open the sprocket covers. Fit the first holes of the paper over the sprocket pins and then close the sprocket covers. Slide the right sprocket unit to remove any slack in the paper and lock it in place.



8. To separate the incoming paper from the printed paper, attach the paper guide. Hold it horizontally and fit its notches over the printer's mounting posts. Then slide the paper guide toward the back of the printer until you feel it click.

9. Slide the left edge guide to the center until it stops at the guide mark; slide the right edge guide to the opposite guide mark.

10. Attach the printer cover and adjust the paper position with the paper-feed knob. Turn the knob until the perforation between pages is just above the print head. Then turn on the printer.

11. Make sure the printer cover is closed. When the printer receives data, it begins printing automatically.

If you want to change the position where printing begins on the page, press LF/FF to advance the page to the next top-of-form position, and then follow the steps on page 2-5 to adjust the loading position.

To eject the paper, tear off the paper entering the printer; then press the LF/FF button to feed the paper forward.

Printing on Special Paper

In addition to printing on single sheets and continuous forms, your printer can also print on a wide variety of paper types, including multi-part forms, labels, and envelopes.

Before printing on special paper, you need to change the paper thickness setting.

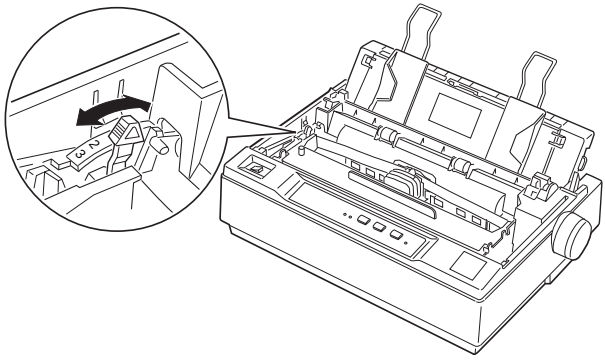
C ***Caution:***
When printing on multi-part forms, thicker-than-normal paper, labels, or envelopes, make sure your software program settings keep the printing entirely within the printable area. Printing past the edge of these papers can damage the print head.

For multi-part forms and labels, you should not print any closer than 0.5 inch or 13 mm from either side of the paper. For information on the printable area of envelopes, see the Appendix.

Adjusting the paper-thickness lever

The paper-thickness lever lets you specify the correct setting for your printing material. It is factory-set for standard office paper. Here's how to change the setting for special papers:

1. Turn the printer off and open the cover. The paper-thickness lever is on the left side of the printer. The numbers next to the lever indicate the thickness setting. For normal use, the lever should always be set to position 0.



2. Use the table below to select the appropriate paper thickness.

Paper type		Lever position
Standard paper (single sheets or continuous)		0
Multi-part forms		
2-sheet		0
3-sheet		1
Labels		1
Envelopes	18 to 22 lb	2
	24 lb	3

3. Close the cover. When you finish printing, move the paper-thickness lever back to position 0.

Multi-part forms

You can use the built-in tractor to print on carbonless multi-part forms of up to three parts (one original plus two copies). Before you print on the forms, set the paper thickness lever as described in the previous section. These tips will help you get good results:

- ❏ Load multi-part forms with the tractor only, not in the cut-sheet feeder or paper guide. For instructions, see "Printing on Continuous Paper" on page 2-7.
- ❏ Use only multi-part forms that are joined by spot gluing and that are free of wrinkles and waves. Never load multi-part forms joined by metal staples, tape, or continuous gluing.
- ❏ If you need to adjust the loading position, use your software program or change the loading position as described on page 2-5.
- ❏ When you use side-crimped multi-part forms, the copies may not align with the original. If this happens, raise the paper guide.

Labels

You must use the tractor as a pull tractor to print on labels. Keep these tips in mind:

- ❏ Choose labels mounted on a continuous backing sheet with sprocket holes made for use with a tractor. Do not print labels as single sheets, because the shiny backing sheet almost always slips a little.
- ❏ You load labels the same way you load continuous paper, except that the paper thickness lever should be set to 1. See page 2-11 for loading instructions.

- ❏ Because labels are especially sensitive to temperature and humidity, use them only under normal operating conditions. Make sure the printing stays entirely within the printable area. (See the Appendix for specifications.)

- ❏ Don't leave labels loaded in the printer between jobs; they curl around the platen and may jam when you resume printing.

- ❏ To remove the labels from the printer, tear off the fresh supply at the rear of the printer; then press LF/FF to advance the remaining labels out of the printer.

C ***Caution:***
Never feed labels backward through the printer; they can easily peel off the backing and jam the printer. If a label does become stuck in the printer, contact your dealer.

Envelopes

You can feed envelopes individually using the paper guide.

- ❏ Before loading an envelope, set the paper thickness lever to 2 or 3. See page 2-16.

- ❏ To load an envelope, follow the steps in "Running the Self Test" on page 1-10. Insert the wide edge of the envelope into the printer first, printable-side down. When you insert the envelope between the paper guides, push it firmly and hold it until it feeds into the printer.

- ❏ Use envelopes only under normal temperature and humidity conditions.

- ❏ Make sure the printing stays entirely within the printable area. The print head must not go past the left or right edge of the envelope or other thick paper. (See the Appendix for specifications.) It's a good idea to print a test sample using a normal single sheet of paper before you print on the envelopes.

Changing the Printer Settings

Your printer has internal settings that control simple functions such as the page length and character set. These settings take effect each time you turn on the printer, so they are also called default settings.

Because the factory printer settings are designed to meet the needs of most users, you probably will not need to change them. See "Printer Settings" on page A-9.

Note:
Because software settings always override the printer's default settings, use your software program to control the printer, if possible. See your software documentation for more information.

If you cannot use your software program to change the printer's settings, you can use the Printer Setting mode. Here's how:

C ***Caution:***
Use paper at least 210 mm (8 1/4 inches) wide for single sheets or 240 mm (9 1/2 inches) for continuous paper; otherwise the print head prints directly on the platen.

Also make sure you have enough sheets of paper because the printer prints several pages of help text.

1. Turn off the printer; if you use continuous paper, make sure the paper is loaded correctly.

2. Hold down the FONT button while you turn on the printer. If you are using single sheets, insert a sheet of paper. The printer automatically loads the paper and prints out a table of languages from which you can choose. You can print instructions in English, French, German, Italian, or Spanish, as shown in Table A below.

Table A

FONT Lights 1	2	Language
0	N	English
0	F	French
N	0	German
N	N	Italian
N	F	Spanish

F = flashing, N = on, 0 = off

3. To choose a language, press the FONT button repeatedly until the FONT lights match your desired selection. For example, to choose Spanish, press the FONT button until FONT 1 is on and FONT 2 is flashing.

4. Press the LF/FF to select the language. The printer prints the current settings in the language of your choice, and then stops.

5. Press the FONT button now to print help text that guides you through the operations. (Once you are experienced with the Printer Setting mode, you can skip this step by pressing LF/FF instead.) The printed instructions include submenu tables that list all of the settings you can change and show you how the control panel lights appear for each selection. After printing is finished, go on to step 6.

6. At this point, you are in Table B. Press the FONT button to move through the printer settings listed in Table B, and notice how the control panel lights change to indicate your position.

Table B

FONT 1 light	FONT 2 light	PAUSE light	Setting	Go to Submenu
F	0	0	Character spacing	Table C
F	N	0	Shape of zero	Table D
0	F	0	Skip-over-perforation	Table E
N	F	0	Character table	Table F
F	F	0	Auto line feed	Table G
F	0	N	Page length	Table H
F	N	N	Auto tear off	Table I
0	F	N	Tractor	Table J
N	F	N	Interface	Table K
F	F	N	Bit rate	Table L
0	0	F	Parity bit	Table M
F	0	F	Data length	Table N
N	0	F	ETX/ACK	Table O
N	N	F	Software	Table P
F	N	F	Auto carriage return	Table Q

F = flashing, N = on, 0 = off

For example, if you want to change the Interface setting, press FONT until FONT 1 is on, FONT 2 is flashing, and the PAUSE light is on. The printer beeps once each time you press the FONT button while in Table B.

7. When you reach the setting that you want to change, press the PAUSE button once. The printer automatically enters a submenu table for that setting. For example, if you choose Interface and then press PAUSE, you enter Table K.

8. See the appropriate table in your printed instructions. Press the FONT button to move through the settings in the table. The printer beeps twice each time you press the FONT button while in a submenu table.

9. When the control panel lights match your desired setting, press the PAUSE button to make your selection. The printer saves the new setting and returns to Table B.

10. Repeat steps 6 through 9 for each additional setting you want to change, or skip to step 11 to exit the Printer Setting mode.

11. When you are finished, turn the printer off. Any settings you have made remain in effect until you change them again.

Printer setting descriptions

This section describes all the settings available in the Printer Setting mode.

Character spacing

When you select 10 cpi, the printer prints 10 characters per inch (cpi). When you select 12 cpi, it prints 12 characters per inch.

Shape of zero

The printer prints the zero character with a slash (Ø) when the setting is on, or no slash (0) when the setting is off. The slashed zero allows you to easily distinguish between an uppercase "O" and a zero when printing such items as program lists.

Skip-over-perforation

When you turn on this feature, the printer skips over the perforations of continuous paper, providing a 1-inch margin between the last line printed on one page and the first line printed on the next. Because most software programs set their own top and bottom margins, you should use this feature only if your program does not provide them. This feature does not affect single-sheet paper.

Character table

Character tables contain the characters and symbols used in different languages. Your printer includes a wide variety of character tables. See the Appendix for specific characters.

Auto line feed

When the auto line feed feature is on, each carriage return (CR) code is accompanied by a line feed (LF) code. If your printed text is unexpectedly double-spaced, set this feature to off. If text lines print on top of each other, set it to on.

Page length

This option is available only when you use continuous paper with the tractor. You can set the page length to 8.5, 11, 12, or 70/6 (the length of A4 paper) inches.

Auto tear off

When you use continuous paper with the push tractor, this feature advances the paper perforation to the tear-off position where you can easily tear off the printed pages. When the printer receives data, it automatically reverses the paper to the top-of-form position and starts printing, so you can use all of the next sheet. When you use the tractor to print on labels, set this feature to off.

Tractor

When you use the tractor as a pull or push tractor, leave this option set to Single. If you install an optional tractor and use both tractors as a push-pull tractor, set it to Double.

Interface

When this feature is set to Auto, the printer determines which interface is receiving data and switches to that interface until the end of the print job (when no data is received from the selected interface for the amount of time specified). You can specify either 10 seconds or 30 seconds.

Set this option to Parallel only if you want the printer to ignore data from the serial interface or to Serial only if you want the printer to ignore data from the parallel interface.

Bit rate, parity bit, data length, and ETX/ACK

These options are available only when the interface is set to Serial. See your computer manual for the appropriate settings.

Installing and Using Options

Cut-sheet feeder

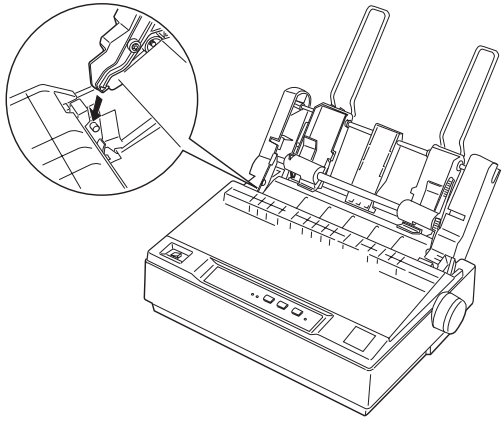
The optional single-bin cut sheet feeder (C80637✻) handles up to 50 sheets of standard bond paper (82 g/m^2 or 22 lb) without reloading. Follow these steps to install the cut sheet feeder:

1. Make sure the printer is turned off. Remove the paper guide.

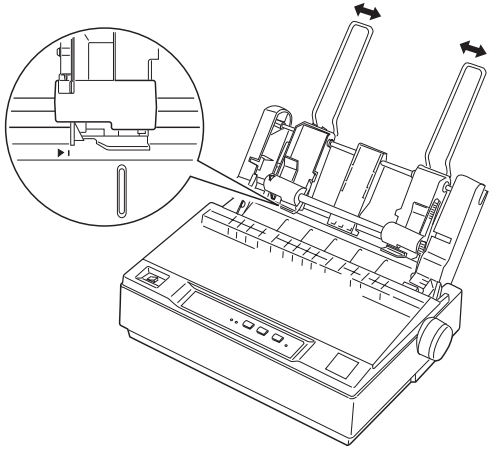
2. If the tractor is installed in the pull-tractor position, remove it and re-install it in the push-tractor position.

3. Make sure the paper-release lever is in the single-sheet position.

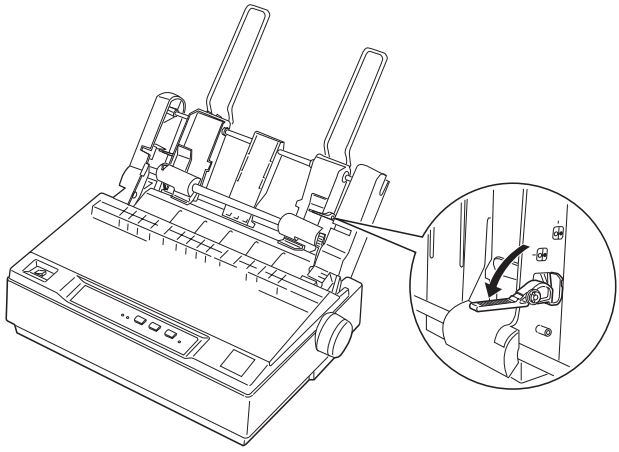
4. Hold the cut-sheet feeder in both hands and press on the latch levers. Fit the notches in the cut-sheet feeder over the mounting posts on the printer. Releasing the latch levers locks the cut-sheet feeder in place.



5. Slide the left paper guide so it is aligned with the triangle mark. Next, slide the right paper guide to roughly match the width of your paper. Slide the paper support midway between the paper guides.



6. Pull the paper-set levers all the way forward until the paper guides retract and lock open to allow for paper loading.



7. Take a stack of paper and fan it. Next, tap the side and bottom of the paper on a flat surface to even up the stack.

> C ***Caution:***
> *Do not use envelopes, multi-part forms, carbon paper, or labels in the cut-sheet feeder.*

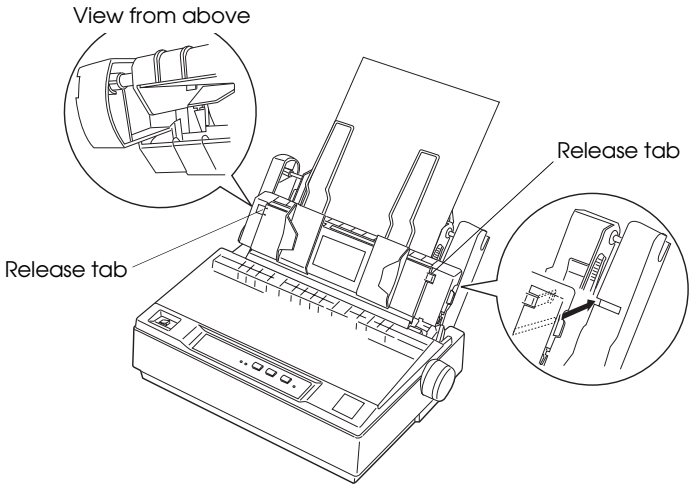
8. Insert up to 50 sheets of paper along the left paper guide.

9. Adjust the position of the right paper guide so that it matches your paper's width. Make sure the position of the guide allows the paper to move up and down freely.

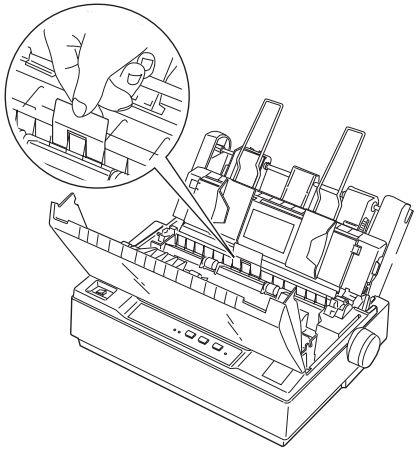
10. Push the paper-set levers back to clamp the paper against the guide rollers.

11. Remove the paper supports from the edge guides. Insert the two stacker supports packed with the cut-sheet feeder into the holes on the edge guides.

12. Attach the paper guide to the cut-sheet feeder as shown below.



13. Open the printer cover. Place the printout guide in the middle. Close the printer cover.



14. Slide the left edge guide to the center until it stops at the guide mark. Then slide the right edge guide to the opposite guide mark.

Note:
To remove the paper guide from the cut-sheet feeder, press both release tabs and pull out the paper guide.

You can easily switch between continuous paper and cut-sheet feeder operation. See "Switching back to single sheets" in Chapter 2 for details.

Note:
When you print several pages of continuous paper, fold the first printed page forward at the perforation after the perforation emerges from below the printer cover. This helps the printer feed the printed pages properly and prevents paper jams.

Pull Tractor unit

An additional pull tractor (C80030*) is available as an option.

You can improve the performance of continuous paper handling by using two tractors at the same time. This is especially useful with continuous pre-printed forms, multi-part forms, and labels. When you use two tractors, set Tractor in the Printer Setting mode to Double. See page 2-23 for more information.

1. Make sure the paper-release lever is pulled forward to the continuous-paper position. Install the built-in tractor in the push-tractor position. Install the optional tractor in the pull-tractor position.

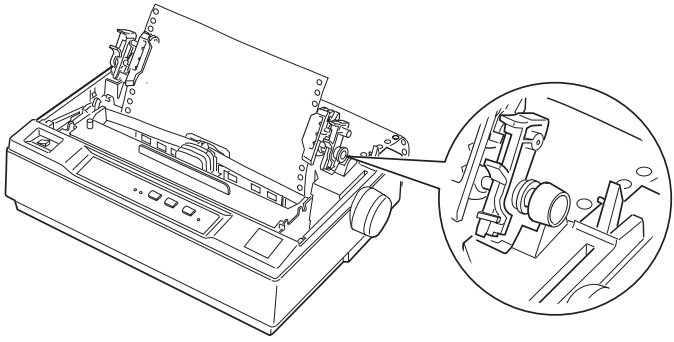
2. Load continuous paper on the sprocket units of the push-tractor. (See "Printing on Continuous Paper" on page 2-7.)

3. Turn on the printer. Hold down the LF/FF button to feed paper one page.

4. Release the sprocket lock levers of the pull tractor and adjust the sprocket units to match the width of the paper. Be sure that the sprocket units on both the tractors are aligned so that the paper is not crooked.

5. Open the sprocket covers. Fit the holes of the paper over the tractor pins of the sprocket units and adjust the sprocket units as necessary. (See "Printing on Continuous Paper" on page 2-7.) Close the sprocket covers.

6. If there is slack in the paper between the push and pull tractors, turn the knob on the right side of the pull tractor to remove the slack.



7. See that the paper is not crooked or wrinkled and lock the sprocket units in place.

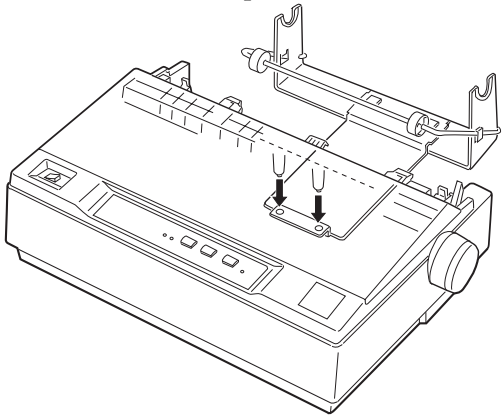
8. Re-install the printer cover and the paper guide.

Roll paper holder

The optional roll paper holder (#8310) allows you to use your printer with 8.5-inch roll paper like that used with telex machines. To use the roll paper holder, follow the steps below. This option is not available in all countries.

1. Turn off the printer and remove the paper guide.

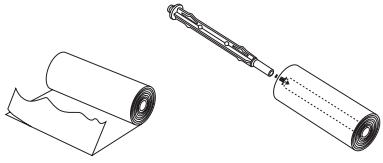
2. Position the roll paper holder beneath the printer as shown below. Fit the two holes in the base onto the two positioning pegs on the bottom of the printer.



3. Push the paper-release lever to the single-sheet position.

C ***Caution:***
Be careful to avoid dropping the roll paper holder when lifting the printer. Only the printer's weight holds it in place.

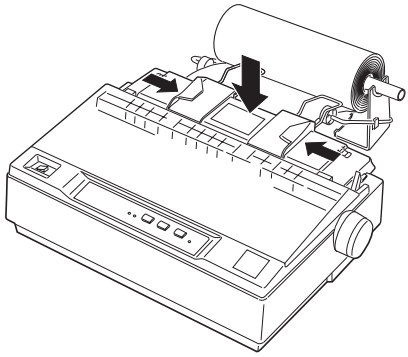
4. Cut the leading edge of the roll paper straight across. Slide the roll paper holder shaft through the center of the paper roll.



5. Set the shaft and paper roll onto the roll paper holder. Orient the roll so that paper feeds from the bottom of the roll. Then turn on the printer.

6. Bring the leading edge of the paper up over the paper path guide for single sheets and insert it into the printer path for single sheets until you feel resistance.

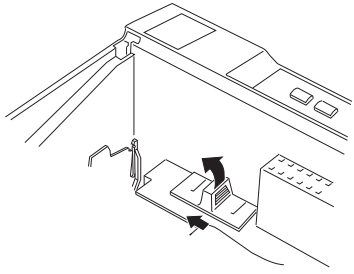
7. Install the paper guide. Slide the left edge guide to the center until it stops at the guide mark. Then slide the right edge guide to the opposite guide mark.



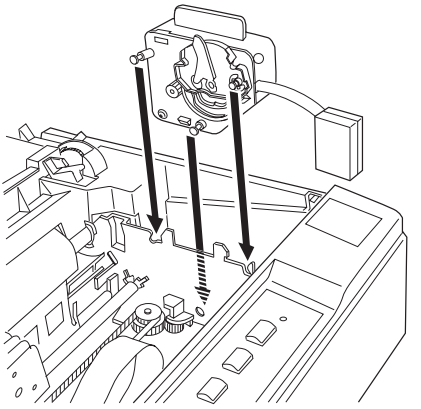
Color upgrade kit

The optional color upgrade kit (C83208*) includes a color ribbon cartridge and a motor unit. Here's how to install the kit:

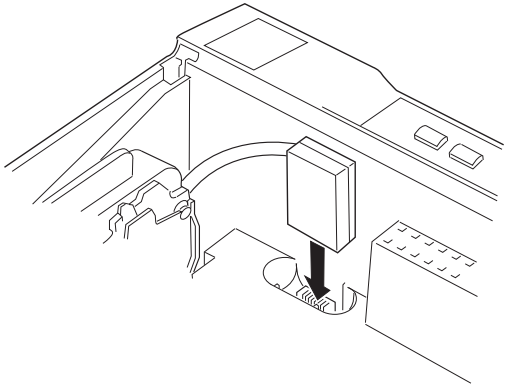
1. Turn off the printer and remove the printer cover. Slide the connector cover on the printer and pull it out as shown below.



2. Install the motor unit in the right hand corner of the printer, with the gear facing the center of the printer. Push it down firmly to fit the metal pins into the slots.

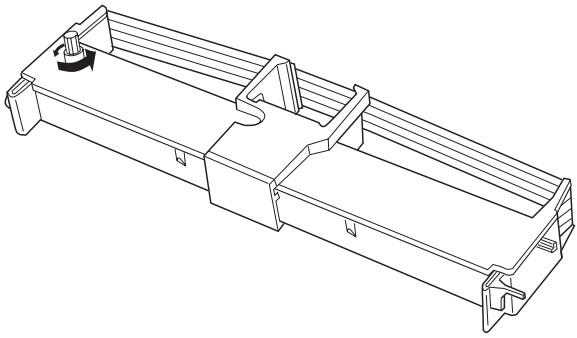


3. Insert the motor unit plug into the connector on the printer.

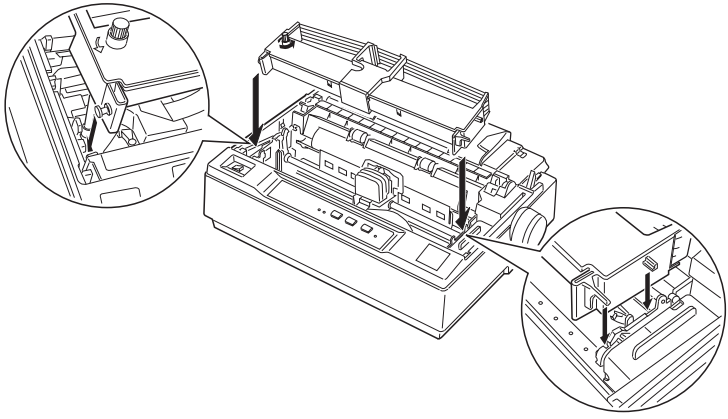


4. Slide the print head to the middle of the printer; then slide the plastic part on the color ribbon to the center of the cartridge.

5. Turn the ribbon-tightening knob in the direction of the arrow to remove any slack in the ribbon.



6. Insert the ribbon cartridge into the printer as shown; then press both sides of the cartridge firmly to fit the plastic hooks into the printer slots.

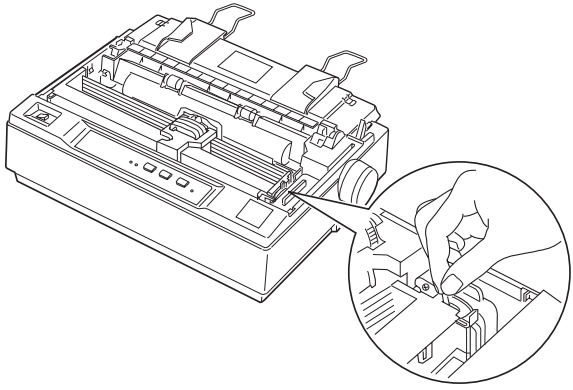


7. Turn the ribbon-tightening knob to help feed the ribbon into place; it should not be twisted or creased.

8. Replace the printer cover.

After you install the color ribbon cartridge, run the self test as shown on page 1-10.

If the top or bottom edge of the characters in the self test are a different color from the rest, adjust the ribbon angle. Check the characters printed in red. If the top edge is blue, move the color ribbon adjustment lever forward. If the bottom edge is yellow, move the lever backward. Then print another self test to check your adjustment. Repeat this process until the ribbon is properly adjusted.



Note:
When you print using the color ribbon, the print speed is reduced.

To switch to the black ribbon, remove the color ribbon as shown in the manual that comes with the color upgrade kit; then install the black ribbon as shown on page 1-5.

You do not have to remove the motor unit.

Chapter 3

Troubleshooting

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Problems and Solutions

Most problems you may encounter while operating your printer have simple solutions.

You can check the operation of your printer using the self test. See "Running the Self Test" on page 1-10. If the self test works properly the problem probably lies in the computer, the software, or the interface cable. If the self test does not work, contact your dealer or qualified service person for assistance.

Note:
If you are an experienced user or a programmer, you can print a hexadecimal dump to isolate communication problems between the printer and computer. To print a hex dump, turn off the printer. Next, hold down the LF/FF and FONT buttons while you turn on the printer. Then send data from your computer. The printer prints all the codes it receives in hexadecimal format.

Power Supply

Power is not being supplied

The lights on the control panel do not go on.

Check that the power cord is properly plugged into the electrical outlet.

If the electrical outlet is controlled by an outside switch or automatic timer, use a different outlet.

Plug another electrical device, such as a lamp, into the outlet to determine whether the outlet is operating properly.

The lights come on briefly and then go off. The lights stay off even when the power is turned on again.

Check that the printer's voltage rating matches the voltage of your electrical outlet. If the voltages do not match, unplug the printer and contact your dealer immediately. Do not reconnect the power cord to an electrical outlet.

Printing

The printer does not print

The PAUSE light is off but nothing is printed.

Check that the software is installed properly for your printer, as described on page 1-16. Check the software's printer settings.

Check both ends of the interface cable. Make sure the cable meets both the printer and computer specifications.

The PAUSE light is flashing and the printer beeps three times.

The printer may be out of paper. Load paper in the printer.

The printer sounds like it is printing, but nothing is printed.

The ribbon cartridge may not be installed properly. See page 1-5.

The ribbon may be worn out. Replace the ribbon cartridge.

The printer makes a strange noise, the beeper sounds five times, and the printer stops abruptly.

Turn off the printer and check for a paper jam, a ribbon jam or other problems. Let the printer cool. Then try to print again. If the printer still does not print correctly contact your dealer.

The beeper sounds five times and the PAUSE light comes on.

An error has occurred. Turn off the printer and turn it on again. If the PAUSE light stays on, check for a paper jam or ribbon jam. If there is no jam, contact your dealer or a qualified service person. (If an error occurs when you switch between single sheets and continuous paper, make sure the paper-release lever is in the correct position.)

The print is faint or uneven

Printed characters have parts missing at the bottom.

The ribbon cartridge may not be installed properly. See page 1-5.

The printout is faint.

The ribbon may be worn out. Replace the ribbon cartridge as described on page 1-5.

Dots are missing in printed characters or graphics

A line of dots is missing in the printout.

The print head is damaged. Stop printing and contact your dealer to have the print head replaced.

Dots are missing in random positions.

Either there is too much slack in the ribbon or the ribbon has come loose. Re-install the ribbon cartridge as described on page 1-5.

Printed characters are not what you expected

The typestyles or characters you sent with your software did not print.

Check that the software is correctly configured for your printer. For instructions, see page 1-16.

The font selected on the control panel does not print.

Your software may be overriding your control panel setting. Check the font setting in your software program.

The print position is not what you expected

Printing starts too high or too low on the page, or the bottom part of one page is printed at the top of the next page.

See "Getting the results you expect" on page 2-6.

Also, it is possible to turn the platen to make minor adjustments to the loading position for the current page only. (Do not turn the platen if you are printing labels.)

Page length does not match the length of the paper.

Check the page length set by your software and adjust it if necessary.

If you are using continuous paper, change the page length in the Printer Setting mode. See "Changing the Printer Settings" on page 2-20.

Regular gaps occur in the printout.

One-inch skip-over-perforation may be set. Set skip-over-perforation to off in the Printer Setting mode. See "Changing the Printer Settings" on page 2-20.

Paper Handling

Single sheets do not feed properly

Paper does not feed.

Continuous paper may be left in the printer. Remove the continuous paper. Set the paper-release lever to the single-sheet position. Insert a new sheet.

Move the paper a little to the left.

Paper feeding is crooked or the paper jams.

Turn off the printer and pull out the paper. Insert a new sheet straight into the paper guide. Make sure you're using the right type of paper. See the paper specifications in the Appendix. Make sure the printer cover is closed.

Paper does not eject completely.

Use the LF/FF button to eject the page.

Make sure the printer cover is closed.

The paper may be too long. Use paper that is within the specified range. See the paper specifications in the Appendix.

Continuous paper does not feed properly

The tractor does not feed the paper.

Check that the paper-release lever is pulled forward to the continuous-paper position. If not, turn off the printer, move the lever, and turn it on again.

The paper may have come off the tractor. Reattach the paper to the tractor.

Paper feeding is crooked or the paper jams.

The position of your paper supply may be preventing it from feeding straight. Make sure the paper supply is not obstructed.

Make sure that your paper supply is positioned within 1 meter (3 feet) of the printer.

Make sure the printer cover is closed.

Make sure the edge guide postions are correct. Position the edge guides at the diamond-shaped guide marks.

Check that the holes on the sides of the paper are aligned with each other. Also, make sure the sprocket units are locked and their covers are closed.

Check that the paper size and thickness are within the specified range. See the paper specifications in the Appendix.

When you use side-crimped multi-part forms, the copies may not align with the original. If this happens, raise the paper guide to keep the printing position accurate.

The paper does not eject properly.

The page may be too long. Tear off the fresh supply of paper and eject the page from the printer. Use only paper that is within the specified length range described in the Appendix.

When you switch between single sheets and continuous paper, the beeper sounds five times and the PAUSE light comes on.

You may have tried to change the paper-release lever position while paper remained in the printer. Return the paper-release lever to the previous position and eject the paper. Then change the paper-release lever position.

Options

When you use the cut-sheet feeder, the paper does not feed properly

The paper does not feed.

The cut-sheet feeder may be incorrectly installed on the printer. Re-install it as described on page 2-25.

Make sure the paper-release lever is pushed back to the single-sheet position.

You may have loaded too many sheets in the cut-sheet feeder's bin.

Paper may be jammed near the print head. Look for a paper jam.

Make sure the edge guide positions are correct. Position the edge guides at the diamond-shaped guide marks.

There may be only one sheet left in the bin. Add more paper.

Two or more sheets feed at one time.

You may have loaded too many sheets in the cut-sheet feeder's bin.

You may have forgotten to fan the stack of paper before loading it into the bin. Remove the paper and fan it.

The paper feed is crooked.

The paper may be old or creased. Use only new, clean sheets of paper.

There may be too much paper in the stacker.

Make sure that the paper guides are set correctly and that your paper is the proper size and quality. See the Appendix for paper specifications.

One page of printing has spread to two pages.

Check that the page-length setting and lines-per-page setting in your software are correct. See "Getting the results you expect" on page 2-6.

Switching between the cut-sheet feeder and the push tractor does not work properly

The desired paper type does not load.

The paper-release lever may not be in the proper position. Pull the lever forward to load continuous paper or push the lever back to load single sheets.

Using the pull tractor with the push tractor, continuous paper does not feed properly

Paper feed is crooked or the paper jams.

The pull tractor and push tractor sprockets are not aligned correctly. When using both tractors, be sure that the sprockets on both are positioned evenly.

The paper may have too much slack. Adjust the position of the sprockets to take up any slack along the width of the paper. Remove slack lengthwise by rotating the paper-feed knob.

The paper may be caught on the edge guides. Make sure that the paper guide is installed over the paper and that the edge guides are positioned correctly.

With color upgrade kit installed, printer doesn't operate properly

The lights on the control panel do not go on.

Did you install the motor in the color upgrade kit? Follow the instructions on page 2-32.

The desired color or certain characters are not printed.

Your software program may not be properly set up for color printing. Use the program's setup (or install) procedure to check the printer setting and adjust as needed.If your software program is capable of sending control codes, select the color using the ESC r command. (See the "Command Summary" in the Appendix.)

The ribbon cartridge may not be installed properly. See Chapter 2.

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Printer Specifications

Printing

Print method:	9-pin impact dot matrix
Print speed:	Draft, 264 characters/second at 12 cpi 220 characters/second at 10 cpi NLQ, 53 characters/second at 12 cpi 44 characters/second at 10 cpi
Printing direction:	Bidirectional logic-seeking for draft text. Unidirectional for graphics, NLQ text, bit image, and color printing.
Line spacing:	1/6 inch, 1/8 inch, or programmable in increments of 1/216 inch.
Paper feed speed:	79 ms per 1/6-inch line; 2.78 inches/second with continuous feed
Printable columns:	80 characters at 10 cpi 96 characters at 12 cpi 137 characters at 17 cpi 160 characters at 20 cpi
Buffer:	Approximately 4KB
Download memory:	Memory capacity for 6 NLQ and 6 Draft user-defined characters
Character fonts:	Epson NLQ Roman Epson NLQ Sans Serif Draft Draft Condensed
Character tables:	
Europe	One italic and 14 graphics character tables
Other countries	One italic and 8 graphics character tables
Character sets:	13 international character sets
Color printing (optional):	
Method	Print ribbon shifting
Ribbon color	Black, Magenta, Cyan, and Yellow

Paper

Single sheets (CSF):

Width:	182 to 216 mm (7.2 to 8.5 inches)
Length:	210 to 364 mm (8.3 to 14.3 inches)
Thickness:	0.07 to 0.12 mm (0.0028 to 0.0047 inches)
Weight:	64 to 91 g/m^2 (18 to 24 lb) ❏ Use 90 g/m^2 (24 lb) paper only under normal temperature and humidity conditions.

Single sheets (manual insertion):

Width:	182 to 257 mm (7.2 to 10.1 inches)
Length:	182 to 364 mm (7.2 to 14.3 inches)
Thickness:	0.065 to 0.14 mm (0.0025 to 0.0055 inches)
Weight:	52 to 90 g/m^2 (14 to 24 lb) paper under normal conditions. ❏ Use 90 g/m^2 (24 lb) paper only under normal temperature and humidity conditions.

Continuous paper:

Width:	102 to 254 mm (4 to 10 inches)
Copies:	Three sheets (one original plus two copies)
Thickness:	0.065 to 0.25 mm (0.0026 to 0.0098 inches) total
Weight:	52 to 82 g/m^2 (14 to 22 lb) for one sheet 40 to 58 g/m^2 (12 to 15 lb) per sheet in multi-part forms ❏ Use only two- or three-part carbonless multi-part forms fed with the tractor. ❏ When using side-crimped multi-part forms, raise the paper guide to keep the printing position accurate. ❏ When using the push tractor, the printing position for the last page may not be accurate because the page comes off the tractor.

Note:
Use recycled paper under normal conditions only. If ribbon consumption or paper jamming increase, use a higher grade of paper.

Labels:

Size:	102 to 254 mm (4 to 10 inches) width for backing sheet 63.5 × 23.8 mm (2.50 × 0.94 inches) minimum for a label
Thickness:	0.07 to 0.09 mm (0.0028 to 0.0035 inches) for backing sheet 0.16 to 0.19 mm (0.0063 to 0.0075 inches) total
Weight:	64 g/m^2 (17 lb) for label only

- ❏ Use only continuous type labels and use them only with the tractor.
- ❏ Use labels only under normal temperature and humidity conditions.

Envelopes:

Size:	No. 6 166 × 92 mm (6.5 × 3.6 inches) No. 10 240 × 104 mm (9.5 × 4.1 inches)
Thickness:	0.16 to 0.48 mm (0.0063 to 0.019 inches)
Weight:	45 to 90 g/m^2 (12 to 24 lb)

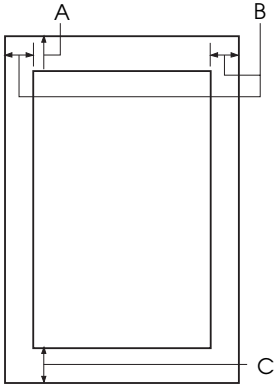
- ❏ Use envelopes only under normal temperature and humidity conditions.

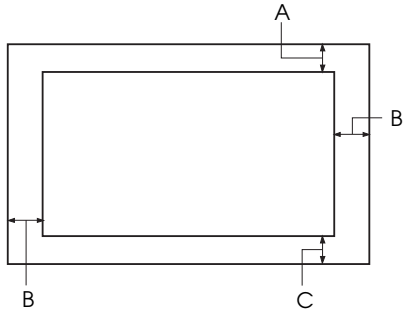
Roll paper (optional—not available in some countries)

Width:	213 to 219 mm (8.38 to 8.62 inches)
Diameter:	Up to 127 mm (5.0 inches)
Thickness:	0.07 to 0.09 mm (0.0028 to 0.0035 inches)
Weight:	52 to 64 g/m^2 (14 to 17 lb)

Printable area:

Single sheets and envelopes



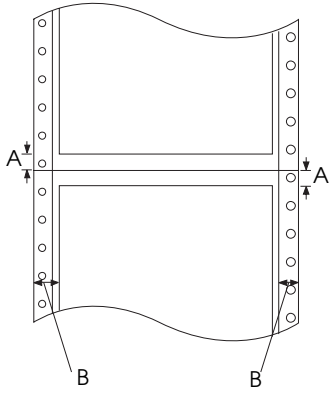


A The minimum top margin is 5.3 mm (0.2 inches).

B The minimum left margin is 3 mm (0.12 inches).
The minimum right margin is 3 mm (0.12 inches).
However, the maximum printable width is 203 mm (8 inches).

C The minimum bottom margin is 9.0 mm (0.35 inches).

Continuous paper



A The minimum top and bottom margins above and below the perforation are 9 mm (0.35 inches).

B The minimum left and right margins are 13 mm (0.51 inches).
The maximum printable width is 203 mm (8 inches).

Mechanical

Paper-feed methods:	Friction Push tractor Push-pull tractor (with optional pull tractor unit) Pull tractor (C80030*) Cut-sheet feeder (option C80637*) Roll-paper holder (option #8310)
Ribbon:	Black ribbon cartridge (#8750) Life expectancy at 14 dots/character: 3 million characters Color ribbon cartridge (S015073) Life expectancy at 14 dots/character: Black, 1 million characters Magenta, Cyan, 0.7 million characters Yellow, 0.5 million characters
MTBF:	4000 power-on hours
Print head life:	200 million strokes/wire (black) 100 million strokes/wire (color)
Dimensions and weight:	Width: 366 mm (14.4 inches) Depth: 275 mm (10.8 inches) Height: 132 mm (5.2 inches) Weight: Approx. 4.0 kg (8.8 lb)

Electrical

120 V model:	
Rated voltage	AC 120 V
Input voltage range	AC 103.5 to 132 V
Rated frequency range	50 to 60 Hz
Input frequency range	49.5 to 60.5 Hz
Rated current	1.0 A
Power consumption	Approx. 30 W (during self-test printing in Draft mode at 10 cpi)
220-240 V model:	
Rated voltage	AC 220–240 V
Input voltage range	AC 198 to 264 V
Rated frequency range	50 to 60 Hz
Input frequency range	49.5 to 60.5 Hz
Rated current	0.5 A

Power consumption	Approx. 30 W (during self-test printing in Draft mode at 10 cpi)

Environmental

Temperature:	Operation	5 to 35°C (41 to 95°F)
	Storage	–20 to 55°C (–4 to 131°F)
Humidity:	Operation	30% to 80% without condensation
	Storage	5% to 85% without condensation

Safety approvals

Safety standards:	
US model	UL1950 with D3, CSA22.2 No.950 with D3
European model	EN 60950 (TÜV, SEMKO, DEMKO, NEMKO, SETI)
RFI:	
US model	FCC part 15 subpart B class B
European model	Vfg 243 (VDE 0878 part 3, part 30) EN 55022 (CISPR Pub. 22) Class B

Interface Specifications

Your printer is equipped with an EIA-232D serial interface and a Centronics-compatible parallel interface. The printer switches automatically to the appropriate interface when it receives data.

Parallel interface specifications

The parallel interface has the following characteristics.

Data format:	8-bit
Synchronization:	$\overline{\text{STROBE}}$ pulse
Handshaking:	BUSY and $\overline{\text{ACKNLG}}$ signals
Signal level:	TTL compatible
Connector:	36-pin 57-30360 Amphenol connector or equivalent

Serial interface specifications

The serial interface has the following characteristics.

Bit rate:	300, 600, 1200, 2400, 4800, 9600, 19200 bps (selectable)
Word length:	
Data format	7 or 8-bit (selectable)
Start bit	1 bit
Parity bit	0 or 1 bit (selectable)
Stop bit	1 bit (transmitting), 1 bit or more (receiving)
Synchronization:	Asynchronous
Handshaking:	DTR protocol, XON/XOFF protocol ETX/ACK protocol (selectable)
Parity check:	Odd, even, or no parity bit (selectable)
Connector:	EIA standard, 25-pin, D-SUB, female connector

Serial pin assignments

The following table lists the serial connector pin assignments and describes their respective interface signals.

Pin No.	Signal	Direction	Description
1	Protective Ground (FG)	—	Printer's chassis ground
2	Transmitted data (TXD/SD)	Out	Printer has transmitted serial data
3	Received data (RXD/RD)	In	Printer has received serial data
4	Request to Send (RTS/RS)	Out	Always positive
5	Clear to Send (CTS/CS)	In	Ignored
7	Signal Ground (SG)	—	Return path for data control signals
11	Reverse Channel	Out	Connected to Pin 20
20	Data Terminal Ready (DTR/ER)	Out	Positive when the printer is ready to accept data, and negative when the printer is not ready

Printer Settings

The table below lists the printer settings that you can change from the control panel. Underlined options indicate the factory default settings that take effect when the printer is initialized (some factory default settings may vary by country). To change a setting, see "Changing the Printer Settings" in Chapter 2.

Function	Options
Character spacing	10 cpi, 12 cpi
Shape of zero	0, Ø (with slash)
1 inch skip-over-perforation	On, Off
Character table	US model: USA Italic, France Italic, Germany Italic, UK Italic, Denmark Italic, Sweden Italic, Italy Italic, Spain 1 Italic, PC437, 850, 860, 861, 863, 865, BRASCII, Abicomp All other models: USA Italic, France Italic, Germany Italic, UK Italic, Denmark Italic, Sweden Italic, Italy Italic, Spain 1 Italic, PC437, 850, 852, 853, 855, 857, 866, 869, 437 Greek, ISO Latin 1T, ISO 8859-7 Code MJK, Mazovia, Bulgaria
Auto line feed	On, Off
Page length	11, 12, 8.5, 70/6, 5.5, 7, 17, 14, 8, 6, 4, 3.5, 3 inches
Auto tear off	On, Off
Tractor	Single, Double
Interface	Auto (10 sec. wait), Auto (30 sec. wait), Parallel, Serial
Serial I/F bit rate	300, 600, 1200, 2400, 4800, 9600, 19200 bps
Serial I/F parity bit	None, Odd, Even
Serial I/F data length	7 bit, 8 bit
Serial I/F ETX/ACK	Disable, Enable
Software	ESC/P, IBM 2380
Auto carriage return	On, Off

Command Summary

Sending printer commands

Most actions your printer performs are controlled by your software. Software commands instruct the printer to print in a particular typeface, feed the paper a certain amount after printing each line, start printing on a particular place on the page, and so on. The commands your printer recognizes are listed in this command summary.

Some software programs let you send these commands yourself. How you format commands depends on the software you are using. Some software programs accept only the decimal format, while others let you type in ASCII characters. (Some programs don't let you insert printer commands at all.) In addition, your software probably specifies certain punctuation you must use to enter the command. The software manual should explain the required format and punctuation.

Using the command summary

The following section lists and describes all the commands by topic. If a command has no parameters, it is merely listed. If it has parameters, they are explained. The parameters are indicated by lowercase italicized letters, usually *n*. The examples below show how the parameters are indicated.

ESC @ is a command with no parameters.

ESC U 1/0 is a command that uses 1 to turn the feature on and 0 to turn it off.

ESC K *n1 n2* is a command with two parameters.

ESC D *nn* is a command with a variable number of parameters.

For further information about using printer commands, see the comprehensive *ESC/P Reference Manual* published by Epson.

Printer operation

ASCII	Dec.	Hex.	Description
ESC @	64	40	Initialize Printer
DC1	17	11	Select Printer
DC3	19	13	Deselect Printer
ESC s 1/0	115	73	Turn Half-Speed Mode On/Off
ESC	60	3C	Select Unidirectional Mode (one line)
ESC U 1 /0	85	55	Turn Unidirectional Mode On/Off
ESC 8	56	38	Disable Paper-Out Detection
ESC 9	57	39	Enable Paper-Out Detection
BEL	7	07	Beeper

Data control

ASCII	Dec.	Hex.	Description
CR	13	0D	Carriage Return
CAN	24	18	Cancel Line
DEL	127	7F	Delete Character

Vertical motion

ASCII	Dec.	Hex.	Description
FF	12	0C	Form Feed
ESC C *n*	67	43	Set Page Length in Lines *n* = Number of lines
ESC C 0 *n*	67	43	Set Page Length in Inches *n* = Number of inches
ESC N *n*	78	4E	Set Skip-Over-Perforation *n* = Number of lines
ESC O	79	4F	Cancel Skip-Over-Perforation
LF	10	0A	Line Feed
ESC 0	48	30	Select 1/8-inch Line Spacing
ESC 1	49	31	Select 7/72-inch Line Spacing
ESC 2	50	32	Select 1/6-inch Line Spacing
ESC 3 *n*	51	33	Select *n*/216-inch Line Spacing
ESC A *n*	65	41	Select *n*/72-inch Line Spacing

ASCII	Dec.	Hex.	Description
ESC J *n*	74	4A	Perform *n*/216-inch Line Feed
VT	11	0B	Tab Vertically
ESC B *nn*	66	42	Set Vertical Tabs Up to 16 tabs entered in ascending order; last *n* should be 0
ESC b c *nn*	98	62	Set Vertical Tabs in Channels The c selects a channel for the vertical tabs, which must be between 0-7
ESC / c	47	2F	Select Vertical Tab Channel

Horizontal motion

ASCII	Dec.	Hex.	Description
ESC l *n*	108	6C	Set Left Margin *n* = Left margin column
ESC Q *n*	81	51	Set Right Margin *n* = Right margin column
BS	8	08	Backspace
ESC e 0 *n*	101	65	Set Horizontal Tab Increments *n* = Horizontal tab interval in spaces ($n \leq$ 21 at 10 cpi, 25 at 12 cpi, or 36 in condensed modes)
ESC e 1 *n*	101	65	Set Vertical Tab Increments *n* = Vertical tab interval in lines
ESC f 0 *n*	102	66	Horizontal Skip *n* = Number of spaces to skip
ESC f 1 *n*	102	66	Vertical Skip *n* = Number of lines to skip
HT	9	09	Tab Horizontally
ESC D *nn*	68	44	Set Horizontal Tabs Up to 32 tabs entered in ascending order; last *n* should be 0

Overall printing style

ASCII	Dec.	Hex.	Description
ESC x *n*	120	78	Select NLQ or Draft *n* = 1: NLQ 0: Draft
ESC k *n*	107	6B	Select NLQ Font *n* = 0: Roman 1: Sans Serif
ESC ! *n*	33	21	Master Select To find the value of *n*, add together the numbers of the typestyles you want to combine from the list below: *n* = 0: 10 cpi 16: Double-Strike 1: 12 cpi 32: Double-Width 4: Condensed 64: Italic 8: Emphasized 128: Underline

Print size and character width

ASCII	Dec.	Hex.	Description
ESC P	80	50	Select 10 cpi
ESC M	77	4D	Select 12 cpi
SI	15	0F	Select Condensed Mode
ESC SI	15	0F	Select Condensed Mode
DC2	18	12	Cancel Condensed Mode
SO	14	0E	Select Double-Width Mode (one line)
ESC SO	14	0E	Select Double-Width Mode (one line)
DC4	20	14	Cancel Double-Width Mode (one line)
ESC W 1/0	87	57	Turn Double-Width Mode On/Off

Print enhancement

ASCII	Dec.	Hex.	Description
ESC E	69	45	Select Emphasized Mode
ESC F	70	46	Cancel Emphasized Mode
ESC G	71	47	Select Double-Strike Mode
ESC H	72	48	Cancel Double-Strike Mode

ASCII	Dec.	Hex.	Description
ESC S0	83	53	Select Superscript Mode
ESC S1	83	53	Select Subscript Mode
ESC T	84	54	Cancel Superscript/Subscript Mode
ESC4	52	34	Select Italic Mode
ESC 5	53	35	Cancel Italic Mode
ESC - 1/0	45	2D	Turn Underline Mode On/Off

Word processing

ASCII	Dec.	Hex.	Description
ESC a *n*	97	61	NLQ Justification *n* = 0: Left justification 1: Centering 2: Right justification 3: Full justification
ESC t *n*	116	74	Select Character Tables Selects character table *n* assigned by ESC (t *n* = 0, 1, 48, or 49 only

Character tables

ASCII	Dec.	Hex.	Description
ESC (t *nn*	40 116	28 74	Assign Character Table ESC (t 3 0 d1 d2 d3 Assign character table set with d2 and d3 to table d1 d1 = 0, 1, 48, or 49

d2	d3	Table name	d2	d3	Table name
0	0	Italic	14	0	PC 866 (Russian)*
1	0	PC 437 (USA)	15	0	PC 869 (Greek)*
1	16	PC 437 Greek (Greek)*	16	0	USSR GOST (Russian)*
3	0	PC 850 (Multilingual)	24	0	PC 861 (Icelandic)*
4	0	PC 851 (Greek)*	25	0	BRASCII (Brazilian Portuguese)**
5	0	PC 853 (Turkish)*	26	0	Abicomp (Brazilian Portuguese)**
6	0	PC 855 (Cyrillic)*	27	0	MAZOWIA (Poland)*
7	0	PC 860 (Portuguese)*	28	0	Code MJK (CSFR)*
8	0	PC 863 (Canadian-French)	29	112	ISO 8859-7 (Latin/Greek)*
9	0	PC 865 (Nordic)	31	0	ISO Latin 1T (Turkish)*
10	0	PC 852 (East Europe)*	32	0	Bulgaria
11	0	PC 857 (Turkish)*			

* Available only in certain areas

** Available in North/South American version only

ASCII	Dec.	Hex.	Description
ESC R *n*	82	52	Select an International Character Set *n* = 0: USA, 1: France, 2: Germany, 3: U.K., 4: Denmark I, 5: Sweden, 6: Italy, 7: Spain I, 8: Japan, 9: Norway, 10: Denmark II, 11: Spain II, 12: Latin America
ESC 6	54	36	Printable Code Area Expansion
ESC 7	55	37	Enable Upper Control Codes

User-defined characters

ASCII	Dec.	Hex.	Description
ESC & *nn*	38	26	Define User-Defined Characters
ESC : 0 *n* 0	58	3A	Copy ROM into RAM *n* = 0: Roman, 1: Sans Serif

ASCII	Dec.	Hex.	Description
ESC % *n*	37	25	Select User-Defined Set *n* = 0: Normal set 1: User-defined set

Color printing

ASCII	Dec.	Hex.	Description
ESC r *n*	114	72	Select printing color The variable *n* selects the printing color according to the table below. 0: Black 1: Magenta 2: Cyan 3: Violet 4: Yellow 5: Red 6: Green

Graphics

ASCII	Dec.	Hex.	Description
ESC K *n1 n2*	75	4B	Select Single-Density Graphics Mode
ESC L *n1 n2*	76	4C	Select Double-Density Graphics Mode
ESC Y *n1 n2*	89	59	Select High-Speed Double-Density Graphics Mode
ESC Z *n1 n2*	90	5A	Select Quadruple-Density Graphics Mode
ESC * *m n1 n2*	42	2A	Select Graphics Mode
ESC ? s *n*	63	3F	Reassign Graphics Mode
ESC ^ *m n1 n2*	94	5E	Select 9-Pin Graphics Mode

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